

WHAT IS CLAIMED IS:

1. A flexible conveyor rail, comprising:  
a plurality of rail pieces arranged in a longitudinal direction of said flexible conveyor rail;  
5 a plurality of stopper pieces each being connected to a corresponding one of said rail pieces;  
a link chain for connecting each set of said rail piece and said stopper piece to other set of said rail piece and said stopper piece to be freely bent in a  
10 vertical direction; and  
wherein a link plate of said link chain is attached to a corresponding one of said rail pieces.
2. A flexible conveyor rail as defined in Claim 1, wherein, each of front and rear end portions of said flexible  
15 conveyor rail is comprised of:  
a terminal rail piece provided at each of said front and rear end portions;  
a terminal link plate to be attached to said each terminal rail piece; and  
20 a terminal stopper piece for attaching said terminal link plate to said each terminal rail piece.
3. A flexible conveyor rail as defined in Claim 2, wherein:  
said terminal rail piece has a length which is  
25 longer than that of each rail piece;  
said terminal stopper piece has the same size as said stopper piece or has a combination of two or more of said terminal stopper pieces whose sum of length corresponds to the length of said terminal rail piece;  
30 said terminal link plate has the same size as said link plate or has a combination of two or more terminal link plates whose sum of length corresponds to the length of said terminal rail piece;  
wherein said terminal link plates of said link  
35 chain and terminal stopper pieces are attached to the

terminal rail piece.

4. A flexible conveyor rail as defined in Claim 2, wherein:

5 said terminal rail piece has a length which is longer than that of each rail piece;

said terminal stopper piece which is integrally formed and has a length corresponding to that of said terminal rail piece; and

10 said terminal link plate has a plurality of link plates whose sum of length corresponds to the length of said terminal rail piece;

15 wherein said terminal link plate with said plurality of link plates and said terminal stopper integrally formed are attached to the terminal rail piece.

5. A flexible conveyor rail as defined in Claim 1, wherein said link chain provides a tension of said flexible conveyor rail, thereby limiting a degree of bent of said flexible conveyor rail when mounted on a transfer system.

20 6. A flexible conveyor rail as defined in Claim 1, wherein a distance between a front surface and a back surface of two adjacent rail pieces and/or two adjacent stopper pieces is arranged to limit a degree of bent in said flexible conveyor rail by contacting the front surface and the back surface with each other.

25 7. A flexible conveyor rail as defined in Claim 1, wherein a front surface and a back surface of each of said rail pieces and/or each of said stopper pieces is perpendicular to the longitudinal direction of said flexible conveyor rail.

30 8. A flexible conveyor rail as defined in Claim 1, wherein a front surface and a back surface of each of said rail pieces and/or each of said stopper pieces is inclined either backwardly or forwardly relative to a vertical line  
35 which is perpendicular to the longitudinal direction of said

flexible conveyor rail.

9. A flexible conveyor rail as defined in Claim 1, wherein each of said rail pieces has an I-shape in cross section and is comprised of an upper flange and a lower flange wherein said lower flange functions as a guide flange for rollers of hangers running thereon and said upper flange functions as a base for receiving said link chain thereon.

10. A flexible conveyor rail as defined in Claim 1, wherein each of said rail pieces has an I-shape in cross section and is comprised of an upper flange and a lower flange wherein said lower flange functions as a guide flange for rollers of hangers running thereon and said upper flange functions as a base on which a base plate is connected for receiving said link chain thereon.

11. A flexible conveyor rail as defined in Claim 9, wherein a gap formed between front and rear surfaces of one side of said lower flange of two adjacent rail pieces is shifted in longitudinal position from a gap formed between front and rear surfaces of the other side of said lower flange of two adjacent rail pieces.

12. A flexible conveyor rail as defined in Claim 9, wherein said guide flange formed at one side of said lower flange is offset in the longitudinal direction relative to an end surface of said rail piece at one end while there is a cut out at the other end.

13. A flexible conveyor rail as defined in Claim 1, wherein each of said rail pieces or each of said stopper pieces is shorter than a distance between two link shafts connecting the link plates of said link chain.

14. A flexible conveyor rail as defined in Claim 1, wherein each of said stopper pieces has an inverted U-shape in cross section.

15. A flexible conveyor rail as defined in Claim 1, wherein each of said rail pieces has an inverted U-shape in cross section and includes at least a lip portion which

functions as a guide flange for rollers of hangers running thereon.

16. A flexible conveyor rail as defined in Claim 1, wherein said link plate of said link chain is provided with a bracket at a bottom so as to be connected to said rail piece through said bracket.

17. A flexible conveyor rail as defined in Claim 1, wherein said link plate of said link chain is provided with a bracket at a bottom, and said rail piece is provided with a base plate at its top, wherein holes are respectively formed on said stopper piece, bracket and base plate so that said stopper piece, link plate and rail piece are connected by fastening bolts through said holes.

18. A flexible conveyor rail, comprising:  
a plurality of rail pieces arranged in a longitudinal direction of said flexible conveyor rail;  
a link chain aligned on the rail pieces in the longitudinal direction;  
a plurality of stopper pieces each being assigned to a corresponding one of said rail pieces;  
wherein said flexible conveyor rail is formed by connecting approximately one unit of link plate of said link chain and one of said stopper piece to one of said rail pieces and repeating this process throughout the flexible conveyor rail except for front and rear end portions thereof.

19. A flexible conveyor rail as defined in Claim 18, wherein, each of front and rear end portions of said flexible conveyor rail is comprised of:  
a terminal rail piece provided at each of said front and rear end portions;  
a terminal link plate to be attached to said each terminal rail piece; and  
a terminal stopper piece for attaching said terminal link plate to said each terminal rail piece.

20. A flexible conveyor rail as defined in Claim 19,  
wherein:

said terminal rail piece has a length which is  
longer than that of each rail piece;

5        said terminal stopper piece has the same size as  
said stopper piece or has a combination of two or more  
of said terminal stopper pieces whose sum of length  
corresponds to the length of said terminal rail piece;

10        said terminal link plate has the same size as said  
link plate or has a combination of two or more terminal  
link plates whose sum of length corresponds to the  
length of said terminal rail piece;

15        wherein said terminal link plates of said link  
chain and terminal stopper pieces are attached to the  
terminal rail piece.

21. A flexible conveyor rail as defined in Claim 19,  
wherein:

said terminal rail piece has a length which is  
longer than that of each rail piece;

20        said terminal stopper piece which is integrally  
formed and has a length corresponding to that of said  
terminal rail piece; and

25        said terminal link plate has a plurality of link  
plates whose sum of length corresponds to the length of  
said terminal rail piece;

wherein said terminal link plate with said  
plurality of link plates and said terminal stopper  
integrally formed are attached to the terminal rail  
piece.

30        22. A flexible conveyor rail as defined in Claim 18,  
wherein said link chain provides a tension of said flexible  
conveyor rail thereby limiting a degree of bent of said  
flexible conveyor rail when mounted on a transfer system.

35        23. A flexible conveyor rail as defined in Claim 18,  
wherein a distance between a front surface and a back surface

of two adjacent rail pieces and/or two adjacent stopper pieces is arranged to limit a degree of bent in said flexible conveyor rail by contacting the front surface and the back surface with each other.

5           24. A flexible conveyor rail as defined in Claim 18, wherein a front surface and a back surface of each of said rail pieces and/or each of said stopper pieces is perpendicular to the longitudinal direction of said flexible conveyor rail.

10           25. A flexible conveyor rail as defined in Claim 18, wherein a front surface and a back surface of each of said rail pieces and/or each of said stopper pieces is inclined either backwardly or forwardly relative to a vertical line which is perpendicular to the longitudinal direction of said  
15 flexible conveyor rail.

20           26. A flexible conveyor rail as defined in Claim 18, wherein each of said rail pieces has an I-shape in cross section and is comprised of an upper flange and a lower flange wherein said lower flange functions as a guide flange for rollers of hangers running thereon and said upper flange functions as a base for receiving said link chain thereon.

25           27. A flexible conveyor rail as defined in Claim 18, wherein each of said rail pieces has an I-shape in cross section and is comprised of an upper flange and a lower flange wherein said lower flange functions as a guide flange for rollers of hangers running thereon and said upper flange functions as a base on which a base plate is connected for receiving said link chain thereon.

30           28. A flexible conveyor rail as defined in Claim 26, wherein a gap formed between front and rear surfaces of one side of said lower flange of two adjacent rail pieces is shifted in a longitudinal position from a gap formed between front and rear surfaces of the other side of said lower flange of two adjacent rail pieces.

35           29. A flexible conveyor rail as defined in Claim 26,

wherein said guide flange formed at one side of said lower flange is offset in the longitudinal direction relative to an end surface of said rail piece at one end while there is a cut out at the other end.

5           30. A flexible conveyor rail as defined in Claim 18, wherein each of said rail pieces or each of said stopper pieces is shorter than a distance between two link shafts connecting the link plates of said link chain.

10           31. A flexible conveyor rail as defined in Claim 18, wherein each of said stopper pieces has an inverted U-shape in cross section.

15           32. A flexible conveyor rail as defined in Claim 18, wherein each of said rail pieces has an inverted U-shape in cross section and includes at least a lip portion which functions as a guide flange for rollers of hangers running thereon.

20           33. A flexible conveyor rail as defined in Claim 18, wherein said link plate of said link chain is provided with a bracket at a bottom so as to be connected to said rail piece through said bracket.

25           34. A flexible conveyor rail as defined in Claim 18, wherein said link plate of said link chain is provided with a bracket at a bottom, and said rail piece is provided with a base plate at its top, wherein holes are respectively formed on said stopper piece, bracket and base plate so that said stopper piece, link plate and rail piece are connected by fastening bolts through said holes.